Montana Hospital Discharge Data System
Surveillance Report
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Extremity Amputations in Montana, 2000 - 2008[1]

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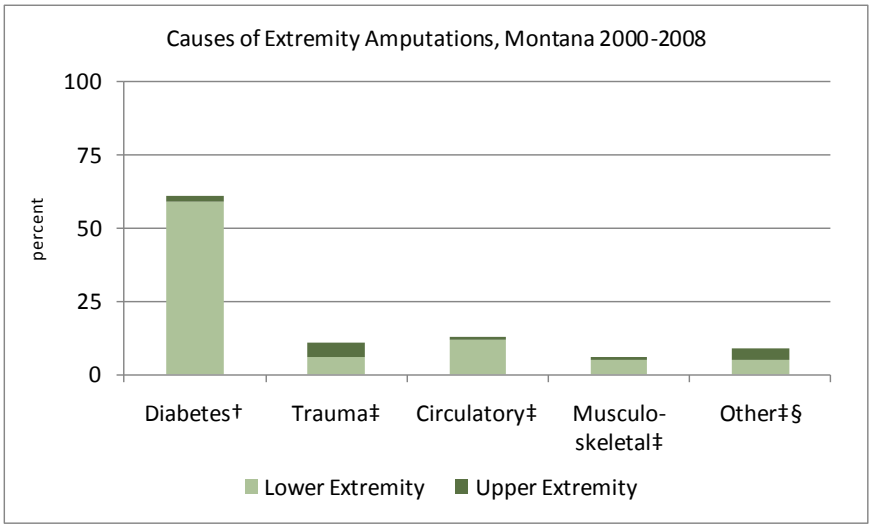
Approximately 1.7 million adults in the United States are living with extremity amputations.[2] Most are attributable to dysvascular disease secondary to diabetes mellitus and are primarily of the lower extremities, while two thirds of upper extremity amputations are traumatic.[3] Traumatic amputations, those attributable to cancer, severe infection, musculoskeletal conditions, and dysvascular disease in the absence of diabetes have been decreasing for the past 20 years, but amputations attributable to diabetes have been increasing as the prevalence of diabetes mellitus has increased.[4] Almost 50,000 adults in Montana report having been diagnosed with diabetes.[5] Montana also ranks high nationally in motor vehicle crashes, particularly those involving high speeds, alcohol, or both,[6] and in occupational injuries.[7] These factors appear to predispose Montana residents to a high risk of amputations.

Between 2000 and 2008, 2,291 Montana residents, an average of 250 per year, were admitted for a primary procedure of upper or lower extremity amputation (ICD-9-CM procedure codes 84.00-84.09 and 84.10-84.19, respectively, which may include amputation of a single digit through amputation of an entire limb). The distribution of causes of extremity amputation in Montana was similar to that of the US as a whole.[8] Two thirds were related to a diagnosis of diabetes, almost all of the lower extremities. Eleven percent were the result of traumatic injury, about equally divided between upper and lower extremities, compared to a distribution of one third to lower extremities and two thirds to upper extremities in the US as a whole.[4]



[1] The Montana Hospital Discharge Data System (MHDDS) receives annual de-identified hospital discharge data sets through a Memorandum of Agreement with the Montana Hospital Association. Most hospitals in Montana participate in voluntary reporting of discharge data from their Uniform Billing Forms, version 2004 (UB-04). The MHDDS receives information on more than 90% of the inpatient admissions from non-psychiatric facilities in the state. It does not receive data on emergency department visits or outpatient procedures at this time. Data sets are currently available for discharge years 2000 through 2008.

[2] Ziegler-Graham K, et al., 2008, *Arch Phys Med Rehabil* 89:422-429

[3] http://www.amputee-coalition.org/fact_shets/amp_stats_cause_html

[4] Dillingham TR et al. 2002. *Southern Med J* 95:875-883.

[5] http://www.BRFSS.mt.gov

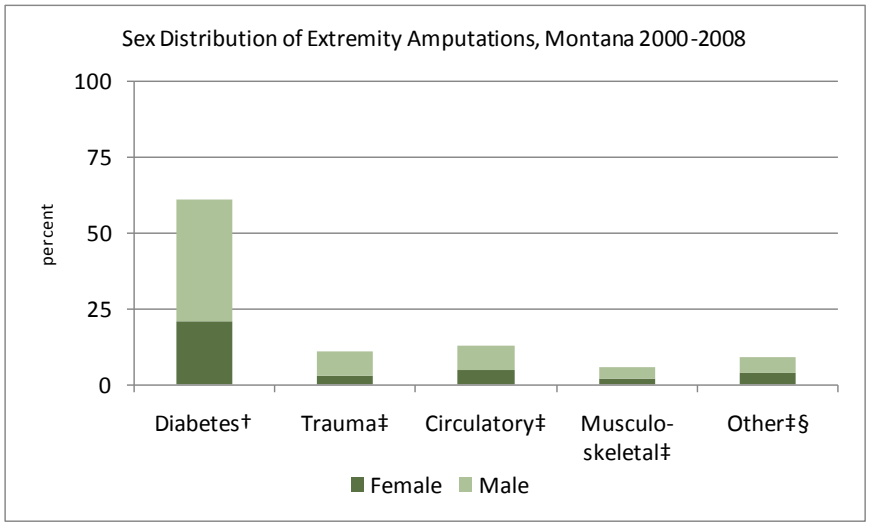
[6] http://www-nrd.nhtsa.dot.gov/departments/nrd-30/STSI/30_MT-2008.html

[7] http://www.bls.gov/iif/oshwc/osh/os/ostb2081.pdf

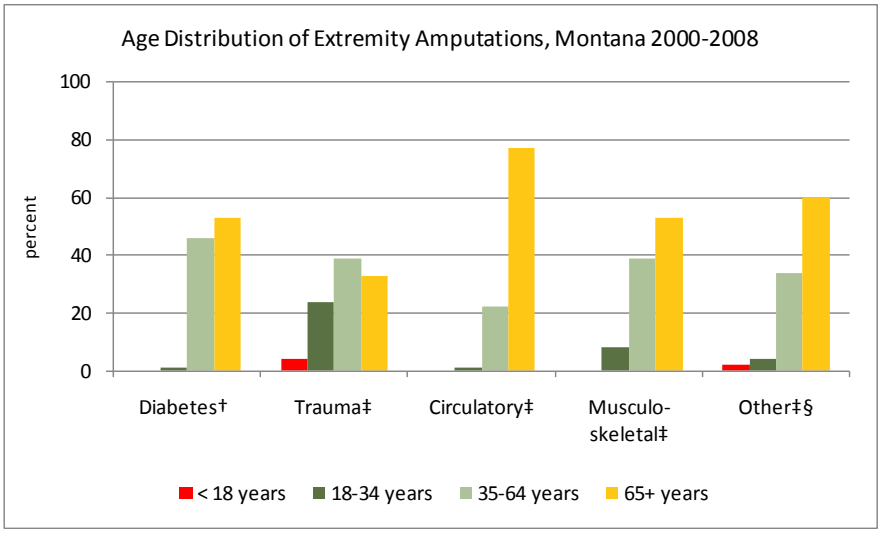
[8] National Hospital Discharge Survey (NHDS) public-use data files (http://www.cdc.gov/nchs/products/elec_producs/subject/nhds.htm)

†Includes admissions in which diabetes was listed as the primary or one of eight secondary diagnoses. ‡ Includes admissions in which the cause was listed as the primary diagnosis and diabetes was not listed among the secondary diagnoses. § Other diagnoses include small numbers of cases in which cancer (n= 9), septicemia (n =24), infections of skin or subcutaneous tissue (n=42), or gangrene (n=26) were the primary diagnoses and diabetes was not listed among the secondary diagnoses. A few discharges (n=14) appeared to be for readmissions or follow-up for the initial amputation.

Men were more likely than women to experience amputations due to diabetes (65% in men) and especially traumatic injury (76% in men). Amputations attributed to circulatory conditions in the absence of diabetes (58% in men), conditions of the musculoskeletal system (58% in men), and other causes (56% in men) were more evenly distributed between the sexes.



Most amputations occurred to patients age 35 years and older. There was a notable excess of amputations attributed to circulatory conditions in the absence of diabetes among the elderly. There were relatively few amputations among young adults age 18 to 34 years, with the exception of traumatic injuries. There were also a small but not negligible number of amputations due to traumatic injuries among children under the age of 18 years.



The great majority of extremity amputations in Montana are potentially preventable. Diabetes was by far the leading cause and many could have been prevented with proper self-care and prophylactic treatment.[9] Fewer than 10% of amputations due to traumatic injury in the MHDDS had a Supplemental Classification of External Causes of Injury and Poisoning (E-code) describing the circumstances of the injury, so we were unable to determine the causes of traumatic injuries leading to amputations. However, the incidence of traumatic amputations in Montana is consistent with the high incidence of injury and mortality attributed to automobile crashes, many involving excessive speed, alcohol, or both, and the high incidence of occupational injury and mortality in Montana.[6,7]

[9] Centers for Disease Control and Prevention. Indicators for chronic disease surveillance. *MMWR* 2004;53(No. RR-11, p. 94); Apelqvist J, LarssonJ. 2000. *Diabetes Metab Res Rev* 16 (Suppl 1):S75-S83; Muha J. 1999. *Postgrad Med* 106:97-102..